

PART 1 - GENERAL

1.1 SUBMISSION OF OPERATION AND MAINTENANCE DATA

Submit Operation and Maintenance (O&M) Data/Manuals that are specifically applicable to this contract and a complete and concise depiction of the provided equipment or product. Organize and present information in sufficient detail to clearly explain O&M requirements at the system, equipment, component, and subassembly level. Submit in accordance with this section and Section 01330, "Submittal Procedures."

1.1.1 Quantity

Submit four sets of the supplier/manufacturers' O&M information specified herein for the components, assemblies, subassemblies, attachments, and accessories. The items for which O&M Data/Manuals are required are listed in the technical sections which specifies those particular items.

1.1.2 Package Quality

Documents must be fully legible. Poor quality copies and material with hole punches obliterating the text or drawings will not be accepted.

1.1.3 Package Content

Data package content shall be as shown in the paragraph titled "Schedule of Operation and Maintenance Data Packages." For each product, system, or component piece of equipment requiring submission of O&M Data, submit the Data Package specified in the individual technical section. Manual format shall be as specified in the paragraph titled "Format."

1.1.4 Delivery

Submit O&M Data Manuals to the Government for review and acceptance; submit data specified for a given item within 30 calendar days after the item is delivered to the contract site.

a. In the event the Contractor fails to deliver O&M Data/Manuals within the time limits set forth above, the Contracting Officer may withhold from progress payments 50 percent of the price of the item with which such O&M Data/Manuals are associated.

1.1.5 Changes to Submittals

Manufacturer-originated changes or revisions to submitted data shall be furnished by the Contractor if a component of an item is so affected subsequent to acceptance of the O&M Data. Changes, additions, or revisions required by the Contracting Officer for final acceptance of submitted data, shall be submitted by the Contractor within 30 calendar days of the notification of this change requirement.

1.2 TYPES OF INFORMATION REQUIRED IN O&M DATA PACKAGES

1.2.1 Operating Instructions

Include specific instructions, procedures, and illustrations for the following phases of operation:

1.2.1.1 Safety Precautions

List personnel hazards and equipment or product safety precautions for all operating conditions.

1.2.1.2 Operator Prestart

Include procedures required to set up and prepare each system for use.

1.2.1.3 Startup, Shutdown, and Post shutdown Procedures

Provide narrative description for each operating procedure including control sequence for each.

1.2.1.4 Normal Operations

Provide narrative description of normal operating procedures. Include control diagrams with data to explain operation and control of systems and specific equipment.

1.2.1.5 Emergency Operations

Include emergency procedures for equipment malfunctions to permit a short period of continued operation or to shut down the equipment to prevent further damage to systems and equipment. Include emergency shutdown instructions for fire, explosion, spills, or other foreseeable contingencies. Provide guidance on emergency operations of all utility systems including valve locations and portions of systems controlled.

1.2.1.6 Operator Service Requirements

Include instructions for services to be performed by the operator such as lubrication, adjustment, inspection, and gage reading recording.

1.2.1.7 Environmental Conditions

Include a list of environmental conditions (temperature, humidity, and other relevant data) which are best suited for each product or piece of equipment and describe conditions under which equipment should not be allowed to run.

1.2.2 Preventive Maintenance

Include the following information for preventive and scheduled maintenance to minimize corrective maintenance and repair.

1.2.2.1 Lubrication Data

Include lubrication data, other than instructions for lubrication in accordance with paragraph titled "Operator Service Requirements":

- a. A table showing recommended lubricants for specific temperature ranges and applications;
- b. Charts with a schematic diagram of the equipment showing lubrication points, recommended types and grades of lubricants, and capacities; and

- c. A lubrication schedule showing service interval frequency.

1.2.2.2 Preventive Maintenance Plan and Schedule

Include manufacturer's schedule for routine preventive maintenance, inspections, tests and adjustments required to ensure proper and economical operation and to minimize corrective maintenance and repair. Provide manufacturer's projection of preventive maintenance work- hours on a daily, weekly, monthly, and annual basis including craft requirements by type of craft. For periodic calibrations, provide manufacturer's specified frequency and procedures for each separate operation.

1.2.3 Corrective Maintenance (Repair)

Include manufacturer's recommendations on procedures and instructions for correcting problems and making repairs.

1.2.3.1 Troubleshooting Guides and Diagnostic Techniques

Include step-by-step procedures to promptly isolate the cause of typical malfunctions. Describe clearly why the checkout is performed and what conditions are to be sought. Identify tests or inspections and test equipment required to determine whether parts and equipment may be reused or require replacement.

1.2.3.2 Wiring Diagrams and Control Diagrams

Wiring diagrams and control diagrams shall be point-to-point drawings of wiring and control circuits including factory-field interfaces. Provide a complete and accurate depiction of the actual job specific wiring and control work. On diagrams, number electrical and electronic wiring and pneumatic control tubing and the terminals for each type, identically to actual installation numbering.

1.2.3.3 Maintenance and Repair Procedures

Include instructions and list tools required to restore product or equipment to proper condition or operating standards.

1.2.3.4 Removal and Replacement Instructions

Include step-by-step procedures and list required tools and supplies for removal, replacement, disassembly, and assembly of components, assemblies, subassemblies, accessories, and attachments. Provide tolerances, dimensions, settings and adjustments required. Instructions shall include a combination of text and illustrations.

1.2.3.5 Spare Parts and Supply Lists

Include lists of spare parts and supplies required for maintenance and repair to ensure continued service or operation without unreasonable delays. Special consideration is required for facilities at remote locations. List spare parts and supplies that have a long lead time to obtain.

1.2.3.6 Corrective Maintenance Work-Hours

Include manufacturer's projection of corrective maintenance work- hours including craft requirements by type of craft. Corrective maintenance that requires participation of the equipment manufacturer shall be identified and tabulated separately.

1.2.4 Appendices

Provide information required below and information not specified in the preceding paragraphs but pertinent to the maintenance or operation of the product or equipment. Include the following:

1.2.4.1 Parts Identification

Provide identification and coverage for all parts of each component, assembly, subassembly, and accessory of the end items subject to replacement. Include special hardware requirements, such as requirement to use high-strength bolts and nuts. Identify parts by make, model, serial number, and source of supply to allow reordering without further identification. Provide clear and legible illustrations, drawings, and exploded views to enable easy identification of the items. When illustrations omit the part numbers and description, both the illustrations and separate listing shall show the index, reference, or key number which will cross-reference the illustrated part to the listed part. Parts shown in the listings shall be grouped by components, assemblies, and subassemblies. Parts data may cover more than one model or series of equipment. components, assemblies, subassemblies, attachments, or accessories, such as a master parts catalog, in accordance with the manufacturer's standard commercial practice.

1.2.4.2 Warranty Information

List and explain the various warranties and include the servicing and technical precautions prescribed by the manufacturers or contract documents to keep warranties in force. Include warranty information for primary components such as the compressor of air conditioning system.

1.2.4.3 Personnel Training Requirements

Provide information available from the manufacturers to use in training designated personnel to operate and maintain the equipment and systems properly.

1.2.4.4 Testing Equipment and Special Tool Information

Include information on test equipment required to perform specified tests and on special tools needed for the operation, maintenance, and repair of components.

1.2.4.5 Contractor Information

Provide a list that includes the name, address, and telephone number of the General Contractor and each subcontractor installing the product or equipment. Include local representatives and service organizations most convenient to the project site. Provide the name, address, and telephone number of the product or equipment manufacturers.

1.3 SCHEDULE OF OPERATION AND MAINTENANCE DATA PACKAGES

Furnish the O&M Data Packages specified in individual technical sections. The required information for each O&M Data Package is as follows:

1.3.1 Data Package 1

- a. Safety precautions
- b. Maintenance and repair procedures

- c. Warranty information
- d. Contractor information

1.3.2 Data Package 2

- a. Safety precautions
- b. Normal operations
- c. Environmental conditions
- d. Lubrication data
- e. Preventive maintenance plan and schedule
- f. Maintenance and repair procedures
- g. Removal and replacement instructions
- h. Spare parts and supply list
- i. Parts identification
- j. Warranty information
- k. Contractor information

1.3.3 Data Package 3

- a. Safety precautions
- b. Normal operations
- c. Emergency operations
- d. Environmental conditions
- e. Lubrication data
- f. Preventive maintenance plan and schedule
- g. Troubleshooting guides and diagnostic techniques
- h. Wiring diagrams and control diagrams
- i. Maintenance and repair procedures
- j. Removal and replacement instructions
- k. Spare parts and supply list

- l. Parts identification
- m. Warranty information
- n. Testing equipment and special tool information
- o. Contractor information

1.3.4 Data Package 4

- a. Safety precautions
- b. Operator prestart
- c. Startup, shutdown, and postshutdown procedures
- d. Normal operations
- e. Emergency operations
- f. Operator service requirements
- g. Environmental conditions
- h. Lubrication data
- i. Preventive maintenance plan and schedule
- j. Troubleshooting guides and diagnostic techniques
- k. Wiring diagrams and control diagrams
- l. Maintenance and repair procedures
- m. Removal and replacement instructions
- n. Spare parts and supply list
- o. Corrective maintenance man- hours
- p. Parts identification
- q. Warranty information
- r. Personnel training requirements
- s. Testing equipment and special tool information
- t. Contractor information

1.3.5 Data Package 5

- a. Safety precautions
- b. Operator prestart
- c. Start-up, shutdown, and post shutdown procedures
- d. Normal operations
- e. Environmental conditions
- f. Preventive maintenance plan and schedule
- g. Troubleshooting guides and diagnostic techniques
- h. Wiring and control diagrams
- i. Maintenance and repair procedures
- j. Spare parts and supply list
- k. Testing equipments and special tools
- l. Warranty information
- m. Contractor information

1.4 FORMAT

1.4.1 Binders

The manuals shall be bound in durable, hardcover, white, three-ring loose-leaf binders that are water and grease resistant. Binders shall be for 8 ½" x 11" sheet size and have a three inch thick capacity. Each volume shall be properly identified on the front face and ring end of the binder (the format and layout shall be provided by the Government). Sheets in the manuals shall be of high quality paper and the dividers shall be heavy duty with plastic reinforced holes and tabs. Instruction sheets, drawings, etc., larger than 8 ½" x 11" but not exceeding 11" x 17" shall be inserted into the binders as single foldout sheets.

A master table of contents and a master index for all volumes shall be provided at the front of each volume. All dividers shall be plastic covered.

1.4.2 Validation

The operation and maintenance procedures shall be validated at the site, in the presence of designated Government representatives. The validation shall be scheduled and completed at a time mutually agreeable to the contractor (system installation contractor) and designed Government personnel (including operating personnel).

1.4.3 Submittal Requirements.

Include the following information:

- a. Division 1
 1. Provide the following data:
 - a. Square feet of area for each floor.
 - b. Total square feet of floor area for the facility.
 - c. Overall width, length, and height of the facility.
 - d. Beneficial occupancy date.
 2. Provide legible small scale architectural floor plans (provided by the Government).
 3. Denote the main connection and cut off points for all utilities, on the small-scale floor plan (information provided by the Contractor, floor plan provided by the Government).
 4. List the as built drawings by title and sheet numbers.
- b. Division 2 thru 16
 1. Provide the as built record of materials (carpets, floor tile, wall covering etc..) used for each applicable section of the construction specifications. Give a description of the material; name, address and telephone number of manufacturer and supplier; and where the material was used.
 2. List the do's and don'ts on proper use and care of material/equipment/system for the applicable Divisions/Sections.
 3. Inventory of Equipment - a listing of all equipment identifying nomenclature such as make model, serial number, size, location, etc. for each item to Include physically marking all equipment and systems components with permanent type tags/labels to include a consecutive identifying number.
 4. Manufacturer's Equipment Information - includes drawings, illustrations, and technical data furnished by the manufacturer for the equipment and systems components and organized/indexed for easy reference.
 5. Parts Lists - provide identification and coverage for all parts of components, assemblies, subassemblies, and accessories of the end items subject to replacement; specify special hardware requirements, e. g., high strength bolts and nuts; identify parts by make, model, serial number, and source of supply to allow reordering without further identification; include clear and legible illustrations, drawings, and exploded views to enable easy identification of the items; shows index/ reference/ key number which will cross-reference the illustrated part to the listed part; parts shown in the listings shall be grouped by components, assemblies, and subassemblies with individual parts identified to the assembly.
 6. Warranty Information - lists each piece of equipment furnished by the construction contract and includes the written guarantees for such equipment. The equipment list shall state the specification section applicable to the equipment, duration of the warranty, start

date of the warranty, ending date of the warranty, and the point of contact for fulfillment of the warranty; provides a listing of required operational and general service maintenance to be performed by the Government to maintain the manufacturer's warranty agreement; includes listing of all maintenance work that can be performed by the Government without voiding the manufacturer's warranty agreement; provides a listing of all shipping and packaging requirements to send off for repair if applicable; and includes procedures for Government personnel to follow when the contractor does not adequately respond in a timely manner to warranty work calls.

7. Information on Testing Equipment and Special Tools Required - includes information on the test equipment required to perform specified tests and on special tools needed for the operation, maintenance, and repair of components.

8. Inspection Plan - provides an occupant inspection checklist for major facility components.

9. Supply Inventory Requirements - lists spare parts, fuels, lubricants, etc. required for maintenance and repair to ensure continued operation without unreasonable delays; reflects special consideration if facility is at a remote location; and list parts and supplies that have a long lead time to obtain.

10. Names, Addresses and Telephone Numbers of Manufacturer's, Suppliers and Contractors/Subcontractors - list by applicable equipment, system, and section of the construction specifications.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION